

**PRELIMINARY AGENDA FOR 2001 PROGRAM REVIEWS FOR
METALLIC MATERIALS AND CERAMIC AND NON-METALLIC MATERIALS**

August 19, 2001

6:00-7:30

Welcome Reception

August 20, 2001

7:30-8:00 Registration/Coffee

8:00-9:15 PLENARY SESSION I

Welcome: Dr. Fuller and Dr. Hartley (30)

Materials in IHPTET: Dr. Patrick Martin, AFRL/ML (45)

9:15-9:30 COFFEE BREAK

9:30-12:00 ORAL PRESENTATION SESSION I

Metallic Materials

0930-1000 *Refractory Metals and Alloys* – D. Dimiduk, AFRL/ML

1000-1030 *Bonding, Energetics and Mechanical Properties of Intermetallics*, A. Freeman, Northwestern University, Evanston, IL

1030-1100 *Optimizing Mechanical Properties and Thermal Stability of Age Hardenable Alloys Through Theoretical Modeling, Alloy Modification and Thermal Mechanical Processing*, E. Starke, University of Virginia

1100-1130 *Phase Stability and Microstructure Control in High Temperature (MO, N)-SI-B Alloys*, J. Perepezko, University of Wisconsin, Madison, WI

1130-1200 *Optimization of Niobium-Based In-Situ Composites for High Temperature Applications*, K. Chan, Southwest Research Institute, San Antonio, TX

Ceramic and Non-metallic Materials

0930-1015 *High Temperature Materials Simulations*

on Parallel Computers, Priya Vashishta, Louisiana State University

1015-1100 *Tailoring of Grain Boundary Chemistry to Produce Super-Creep Resistant Alumina*, M. Harmer, Lehigh University

1100-1130 *Fundamental Studies of Novel Contact-Damage-Resistant Ceramics*, Padture, University of Connecticut

1130-1200 *Carbon Materials Research*, W. Hoffman, AFRL/PR

12:00-1:30 LUNCH

1:30-3:30 POSTER SESSION I

3:30-5:00 ORAL PRESENTATION SESSION II

Metallic Materials

- 1530-1600 *High Cycle Fatigue Studies*, T. Nicholas, AFRL/ML, W-PAFB, OH
1600-1630 *High Cycle Fatigue, MURI*, R. Ritchie, University of California-Berkeley
1630-1700 *Length Scale Considerations in the Formation of Attachment Fatigue Cracks*, R. Neu & D. McDowell, Georgia Institute of Technology, Atlanta, GA

Ceramic and Non-metallic Materials

- 1530-1600 *Designed Ceramics for Aerospace Applications*, I.W. Chen, University of Pennsylvania
1630-1701 *High Temperature Strengths and Deformation of Ceramics*, S. Yip, Massachusetts Institute of Technology
1630-1702 *New Class of High-Temperature Pseudo-Amorphous Oxide Materials*, S. Sambasivan, Applied Thin Films, Inc.

5:00-6:00 SOCIAL HOUR

6:00 DINNER

August 21, 2001

7:30-8:00 Registration/Coffee

8:00-8:45 PLENARY SESSION II

Materials for IHRPT: Dr. Dallis Hardwick, AFRL/ML

8:45-10:30 POSTER SESSION II

Posters and Coffee

10:30-12:00 ORAL PRESENTATION SESSION SESSION III

Metallic Materials

- 1030-1100 *Processing of Materials*, S. L. Semiatin, AFRL/ML, W-PAFB, OH
1100-1130 *Fundamental Studies of Microstructure Evolution During Friction Stir Welding of Aluminum Alloys*, P.R. Subramanian, GE Corporate R&D Center, Schenectady, NY
1130-1200 *Metallurgical Factors Influencing Direct Laser Deposition of Metallic Powders of Unitized Structures*, H. Fraser, The Ohio State University, Columbus, OH

Ceramic and Non-metallic Materials

- 1030-1100 *Controlled Crystallization of Amorphous Oxide Fibers*, W. Kriven, University of Illinois Urbana-Champaign
1100-1130 *Directionally Solidified Eutectic Ceramics: In-Situ Composites for High Temperature Structural Applications*, A. Sayir, Case Western Reserve University
1130-1200 *Fundamental Interface Structure-Property Relationships for High Temperature Ceramic Composites*, E. Dickey, Pennsylvania State University

12:00-1:00 LUNCH

1:00-2:30 ORAL PRESENTATION SESSION IV

Metallic Materials

- 1300-1330 *High Specific Strength Structural Materials*, D. Miracle, AFRL/ML, WPAFB, OH
- 1330-1400 *Interfacial Atomic Structure, Segregation and Strength of Polysynthetically Twinned TiAl*, D. Luzzi, University of Pennsylvania, Philadelphia, PA
- 1400-1430 *Mesosopic Measurement and Modeling of Slip Transfer Across Boundaries in Anisotropic Metallic Systems*, T. Beiler, Michigan State University, East Lansing, MI

Ceramic and Non-metallic Materials

- 1300-1330 *Ultrahigh Temperature Silicon Carbonitride Fiber Science*, R. Raj, University of Colorado
- 1330-1400 *Carbonthermal Reduction Synthesis and Structural Evolution of Nanocrystalline Ultrahigh Temperature Metal Carbides*, Sachs
- 1400-1430 *High Temperature Studies of La-Monazite*, D. Marshall, Rockwell Science Center

1430-1500 BREAK

1500-1630 ORAL PRESENTATION SESSION V

Metallic Materials

- 1500-1530 *Lifetime Prediction*, J. Larsen, AFRL/ML
- 1530-1600 *Processing and High-Temperature Properties of Laminated Nb/Nb₃Si₃ Composites*, T. Weihs, Johns Hopkins University, Baltimore, MD
- 1600-1630 *Nanoscale Engineering of Multilayer Laminates for High Temperature Application*, P. Anderson, The Ohio State University, Columbus, OH

Ceramic and Non-metallic Materials

- 1500-1530 *Oxidation and Catalytic Efficiency of ZrB₂ and HfB₂ Based Ultra-High Temperature Ceramic (UHTC) Composites Exposed to Supersonic Air Plasma*, J. Marschall, SRI International
- 1530-1600 *Evaluation of Monazite Coatings In Oxide-Oxide Composites*, R. Kerans, AFRL/ML
- 1600-1630 *Concurrent Research on High Gravity (g) Combustion and Enabling Materials*, R. Kerans, AFRL/ML

4:30-5:00 PLENARY SESSION III

Concluding Remarks – J. Fuller and C. S. Hartley

POSTER SESSION I **Metallic Materials**

Non-Destructive Testing and Evaluation, C. Kropas-Hughes, AFRL/ML

Combined Theoretical and Experimental Study of a New Mechanism of Yielding with Application to the Brittle-Ductile Transition, D. P. Pope, University of Pennsylvania

Linking Atomic & Meso-Scale Mechanical Behavior with Microsample Testing and HRTEM, K. Hemker, Johns Hopkins University

Microstructural and Mechanistic Study of Creep in Titanium Alloys, M. J. Mills, The Ohio State University

Microstructure and Creep Behavior of Next Generation of Very High Temperature Refractory Alloys, V. Vasudevan, University of Cincinnati

Electronic Structure Methods for the Design of Alloy Chemistry, M. Eberhart, Colorado School of Mines, Golden, CO

Local Strain Development and Property Variability in B2 Intermetallics, Tresa Pollock, University of Michigan

Imaging of Subsurface Cracks, B. Cooper, West Virginia University

POSTER SESSION II **Metallic Materials**

Nano-energetic Materials, R. Armstrong, AFRL/MN, Eglin AFB, FL

Directional Recrystallization Processing, H. Frost and I. Baker, Dartmouth College, Hanover, NH

Efficient Determination of Phase Stability for Design of High-Temperature Composites, J.-C. Zhao, GE Corporate R&D Center, Schenectady, NY

Fundamental Investigations of Plasticity in High Strength Nanostructured Aluminum Alloys, R. Mishra, University of MissouriRolla, Rolla, MO

Atomic Transport in Titanium Aluminides, Y. Mishin, George Mason University, Fairfax, VA

Theory and Modeling of Polydomain Adaptive Nanocomposite, A. Roytburd, University of Maryland, College Park, MD

Studies of Heterogeneous and Diffusion-Influenced Nucleation for Improved Processing of Nanostructural Materials, K. Kelton, Washington University, St. Louis, MO

Fundamental Mechanisms of Deformation & Fracture in High-Strength Bulk Metallic Glasses and Their Composites, R. Dauskardt and W. D. Nix, Stanford University, Stanford, CA